



US Army Corps  
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# Engineer Update

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## Hydro team finds crashed plane

By James Crawford  
and Steve Johnston  
New England District

Pinpointing a crashed private plane in deep water off the coast of Boston earned kudos for two New England District hydrographic surveyors.

On May 6, two families took off from the Beverly, Mass., airport in a small twin-engine plane for an evening dinner at a restaurant on Nantucket Island. Around 8 p.m. they began the 30-minute return flight. Near Boston, the plane developed engine problems at an altitude of 1,500 feet.

Unable to correct the problem or reach land, the pilot (one of the fathers) ditched the plane wheels-up on its belly in the water about two miles off the shore of Nahant, Mass. Both families escaped in the plane's life-raft before the aircraft sank. The Coast Guard rescued them 30 minutes later. All nine survivors were treated and released at a local hospital.

The crash and its aftermath received heavy media coverage during the following week, focusing on the pilot's success in ditching the plane in the ocean with no serious injuries, and speculating on the cause of the plane's engine trouble. On May 7, the National Transportation Safety Board began its investigation, working with the Coast Guard and the Marine Division of the Massachusetts State Police to locate the plane on the sea bottom.

At that time, New England District's Survey Unit had a hydrographic crew working in the entrance channel to Boston Harbor. Crew chief Jeff Preston heard media reports early in the morning on May 8 that the investigating agencies were having trouble locating the plane. After consulting the Survey Unit chief, Preston offered to help, informing the Coast Guard at Group Boston Station



The crew of New England District's survey boat found an airplane which crashed in the ocean near Boston. (Photo courtesy of New England District)

that he had sonar capable of locating underwater features. The Massachusetts State Police quickly responded at 7 a.m., telling him any assistance he could offer would be greatly appreciated.

The only information available on the location of the crash site was a coordinate taken by the Coast Guard during the rescue about 30 minutes after the crash. Preston and his crew, Tim Maynard and Barry Sullivan, were on-site by 8:30 a.m., and began a search radius of 1,500 feet around the coordinate.

They located several potential hits during this first stage of the search. All hits were dismissed as natural ocean floor contours, after a closer look through the sonar's hydrographic software. The crew completed this initial search at about 12:30 p.m.

As the crew took a brief break, Preston created a model

of highest predictability of the crash site. He noted tide and wind conditions at the time of the crash, estimated how far the life-raft had drifted, and from that estimated where the plane might have gone down. He then set up 10 sonar track lines through that area, theorizing the crash site would not be further than 5,000 feet from the rescue spot.

The crew resumed running the additional sonar lines at 12:50 p.m. At 1:45 p.m., they got a hit about 3,600 feet from the rescue site in 95 feet of water. They made several more runs over the spot, and Preston and his team felt they had a high-potential find.

The crew spent the rest of the afternoon and evening examining this hit using the sonar software. The overall dimensions matched those published in the local newspaper, and they were reasonably certain it was the plane. They notified the state police and agreed to meet with them the next morning.

At 6 a.m. on May 9, the crew made another run over the site to verify the finding from the day before. They hit the spot on their first attempt and verified their coordinate. They then met with the state police, who assembled a dive team. Preston and his crew went out ahead of them and placed a marker buoy at the hit location to expedite the diving operations.

At 11:30 a.m., the first diver went in the water and followed the marker line to the bottom. Imagine the pride Preston, Maynard, and Sullivan felt when the diver reported that the weight on the end of the buoy line had landed directly on the wing of the plane.

The *Boston Globe* and other media reported that the "sophisticated sonar from the U.S. Army Corps of Engineers...pinpointed the resting spot of the plane."

(James Crawford and Steve Johnson work in Construction/Operations in New England District.)

## Derrick team loads 16 tons of copper

By Lynn Duerod  
Chicago District

A slab of pure copper ore weighing 33,000 lbs. (16.5 tons) is on display at the Michigan Technological University (MTU), thanks to a Detroit District barge crew from the Duluth Area Office. The crew raised the gigantic rare block of copper from the bottom of Lake Superior and hauled it to shore for display in MTU's Seaman Mineral Museum.

"It's all in one piece - no stresses, no strains," said project coordinator Bob Barron, facilities manager for MTU's geology department. Barron discovered the boulder a decade ago and has worked since then to retrieve it.

It's rare to come across unburied copper slabs of this size, even underwater, according to officials of the Seaman Mineral Museum. The boulder, which lay nearly one mile offshore in 30 feet of water, was lifted onto the Detroit District derrick barge *H.L. Schwartz* by a crane with a built-in scale.

The *Schwartz's* dynamoelectric weighing system topped-out the slab at 33,000 pounds. The slab measures more than 18 feet long, eight feet wide, and 15 inches thick. The predominant color is a light green, with patches of brown and purple. According to museum officials, it is the biggest chunk of copper ever pulled from the lake, and one of the world's largest copper specimens on display.

A 20-ton jack lifted the boulder, and heavy-duty nylon straps were slipped underneath. The crew on the derrick barge attached their crane to the straps and brought the boulder to the surface. It was transferred to a flatbed truck and taken to the museum.

The museum is in Houghton, Mich., on Michigan's Keweenaw Peninsula. Mining was a way of life on the Keweenaw Peninsula for more than a century because, according to museum experts, no place on Earth has so much pure copper in the ground.

Volcanic activity millions of years ago created vast deposits of copper on the Keweenaw, which juts out 80 miles into Lake Superior in the northwestern corner of Michigan's Upper Peninsula. American Indians mined copper between 3,000 and 7,000 years ago, using it for weapons and tools. White explorers discovered it anew in the mid-1800s, touching off a mineral rush and economic boom.

Mining ended in the region in the late 1960s. Although there is more copper underground, producing it is too costly to compete with open-pit operations elsewhere.

The copper boulder will become the centerpiece of the Seaman Mineral Museum. "It's a gorgeous hunk of the Keweenaw," said Barron. "It's one of the natural wonders that you just can't find anywhere else but the state of Michigan."

(John Larson, Duluth Area Office, contributed to this article.)



The derrick barge *H.L. Schwartz* hauls the 16.5-ton copper slab from Lake Superior. The slab, one of the largest pieces of copper in the world, is on display in the Seaman Mineral Museum. (Photo courtesy of Duluth Area Office)

## Insights

# All faiths support a dedicated work-ethic

By Col. Lowell Moore  
Chaplain, U.S. Army Corps of Engineers

While visiting New York District in July, I stayed in the guesthouse on Fort Hamilton. As often happens on my trips, when I unpacked my suitcase I realized that I forgot to pack a few essential items.

(I could avoid such predicaments if I could convince my wife that it's her job to pack my suitcase. So far, she hasn't accepted *that* as part of "for better or for worse.")

After some thought and deliberation, I decided to walk down to the Fort Hamilton Post Exchange (PX) and purchase the needed supplies.

So I went to the PX, picked up what I needed, and got into a checkout line.

While standing in line, I overheard one PX employee say to another who was leaving for the day, "Don't work too hard; just look like it." With that, the two PX employees spent the next few minutes talking and laughing about working, loafing, and getting paid. They concluded that the ultimate employee would be able to do nothing, and do it so well that his boss would thank him and give him a promotion.

As I listened to them elaborate on this self-centered philosophy of work, I got disgusted and thought, "I'm glad they don't work for the U. S. Army Corps of Engineers." First, anyone with half a brain knows that this philosophy won't work. Usually, the boss spots the unproductive hours, recognizes the waste of company time, and rewards it appropriately – and *not* with a promotion.

But it got worse. Wondering what kind of guy would

openly proclaim the merits of such a shameful work-ethic, I turned around to see who made the initial statement. When I saw him, I was more than disgusted; I was sorely offended. He was actually promoting slothfulness while wearing a huge gold cross on a fancy necklace.

I wanted to ask him how he reconciled his work-ethic with passages like, "Work hard and cheerfully at whatever you do, just as though you were working for the Lord..." (Col. 3:23), or "All hard work brings profit, but mere talk leads only to poverty," (Prov. 14:23). Those are just two of many such scriptures.

But he was much bigger than me and I like my face the way it is, so I kept my mouth shut.

On the way back to the guesthouse, I couldn't stop thinking about the discussion I had overheard and how it was in direct opposition with the work-ethic represented by the cross. And the more I thought about it, the more I wondered how other religions of the world would view that philosophy of "work."

So I asked one of my Hindu buddies, Hari, a member of New York District, if the PX employee would make a good Hindu. Hari emphatically assured me that such philosophy had no place in Hindu thought. In fact, the exact opposite would be the case.

When I got back to Washington, D.C., I called a fellow chaplain who is Muslim and asked him the same question. He confirmed my suspicion that the Muslims' work-ethic is as noble as the Christians'.

I spent three years in Japan and made friends who were Buddhist and Shinto. During those years, we discussed religion enough to tell me that neither of those groups



would not endorse the PX employee's work philosophy.

And, of course, I've spent seven years in college and seminary studying the Judeo-Christian faith, and I know such a belief is not welcome there.

During this month that contains a holiday dedicated to labor, maybe we should pause to evaluate our philosophy of work and re-examine it in light of our religious beliefs. The thought I've given to the conversation in the PX, and the opinions of my friends in other faiths, leads me to believe that people of faith should be the hardest working, most dependable employees the Corps has.

However, if you are aligned with those who believe in doing as little as possible and getting all you can for it, I have a special request – please do *not* wear a cross or any other religious symbol. Your work ethic is offensive to all people of faith.

(The views expressed in this article are those of the author and do not reflect the official policy or position of the U.S. Army Corps of Engineers, the Department of the Army, the Department of Defense, or the U.S. government.)

## Commentary

# Love is the universal language of people

By Christina Swanson Plunkett  
Jacksonville District

When I was young and naïve, I used to wonder how two people could fall in love and marry when neither spoke the same language. Even though I'm the product of such a union, (my father, a Georgia native, met my mother, a Hungarian teenager, in Germany a few years after World War II), the idea was incomprehensible.

Being a sophomore communications major at the time, I thought deep soul-searching sharing was instrumental to any good relationship and was certainly a prerequisite before falling in love.

When I got a little older, I learned that love knows no language, and at the same time is the universal language. I was reminded of these feelings a few years back when I watched young couples dance to Hispanic folk music at a Hispanic Heritage Month event. These songs were much more than just dances. They were an expression of what

gives meaning to everyone's life (no matter the race, culture, or religion) and that is love.

Historians call America a "melting pot" because many nationalities of people came together to become Americans today. But in order for the pot to "melt," it must be seasoned with love. Without respect, caring, understanding and acceptance (all expressions of love) America's very existence would not be possible.

We're all walking histories in diversity. Evidence can be found just by looking up one's ancestry. Sometimes examining one's roots can be an enlightening and humbling experience. With all races being a multi-mix, (for example, Anglo-Saxons descended from Germany, Scandinavia, and England), we're more each other's brother and sister than we may realize.

Learning about one's past can open our hearts to the simple truth that we need each other. The more time



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# Corps offices win Presidential awards

The U.S. Army Corps of Engineers earned two of nine President's Quality Awards (PQA) issued to federal organizations for continuous management improvement during a ceremony in Washington, D.C. on Aug. 3. The Engineering and Support Center, Huntsville received the Award for Quality Improvement, and Huntington District received a finalist award.

## Standards and values

"The winners reflect the standards and values that President Bush and Vice President Cheney say are necessary to transform the federal government into a citizen-centered, results-oriented, and market-driven institution," said Kay James, the director of the Office of Personnel Management. OPM manages the President's Quality Awards program. "They (Bush and Cheney) believe in encouraging and empowering individuals and organizations to stretch, to grow, to strive, to seek and to do everything within their policies what works best, and then to share those practices with their colleagues."

Applicants were reviewed through a three-tiered evaluation process — an application review, a site visit to verify and clarify the application information, and a visit by a panel of judges.

## APIC

The program's award criteria, created in 1988, are published annually as the Army's Performance Improvement Criteria (APIC). Applying APIC practices helped the Huntsville Center reach excellence, according to its commander, Col. Harry Spear.

"We started using APIC in 1995, but it takes time to embed it into the organization," said Spear. "What makes APIC unique is that it can be applied to any organization along with leadership and dedication."

"Though Huntsville Center is proud to receive this recognition, the ultimate



The Anniston Chemical Demilitarization Facility is one of the projects managed by the Engineering Support Center, Huntsville. (Photo courtesy of the Huntsville Center)

winners are our customers, especially soldiers," said Betty Neff, Huntsville Center's Quality Coordinator. "After all, funds are appropriated to the Army, not Huntsville. Bottom line — if Huntsville is efficient, we help stretch Army dollars."

## Huntsville accomplishments

Huntsville Center's achievements include:

- Simplified acquisition methods for maintenance, repair and renewal, a reduced contract cycle time by 200 days for the Energy Program, and 120 days for the Medical Program.

- The Ordnance and Explosives Program developed a new technique for locating and evaluating areas with unexploded ordnance called Meandering Path Geophysical Investigation. Average savings are \$2,500 per acre for vegeta-

tion clearance, \$500 per acre for surveying, and \$3,500 per acre for project mobilization and site analysis.

- Streamlined electronic solicitations, saving \$5,000 per solicitation over the traditional paper process. By switching from a single award system to a multiple awards system, HNC saved \$165,000 per award.

## Huntington accomplishments

Improvement is also the goal in Huntington District.

"Quality isn't about awards; it's about being a better organization," said Col. John Rivenburgh, commander of Huntington District. "The PQA process gave us the opportunity to tell our story and demonstrate just how good the Huntington District team is at what they do for our nation. We're not through with our journey. We're looking forward to closing the gaps we have and becoming the best-of-the-best during the next two years."

The accomplishments of Huntington District include:

- Revised its strategic-planning process to incorporate a long-range orientation to the five key success factors in the district-level strategic business plan.
- Established a Customer Service Center as a business office.
- Managed core operations through the Project Management Business Process.
- For the past two years, surpassed the target for reducing the overhead rate.
- Established a Leadership Intern Program.

The PQA award winners were:



Moving Grundy, Va., from one bank of the river to a safer place on the other bank is one of the projects that challenges Huntington District. (Photo from the Digital Visual Library)

## Winners

**Presidential Award for Quality** — Grand Junction Veteran Affairs Medical Center.

**Quality Improvements Award** — Engineering Support Center, Huntsville, and the Navy Public Works Center.

**Merit Award** — 62<sup>nd</sup> Airlift Wing at McCord Air Force Base, Wash.

**Finalists Award** — Huntington District, 10<sup>th</sup> Area Support Group, Federal Aviation Administration Logistics Center, Fort Stewart and Hunter Army Airfield, and Norfolk Naval Shipyard.

(Staff Sgt. Marcia Triggs of the Army News Service, and Bernard Tate of Headquarters contributed to this article.)

# Love

## Continued from previous page

spent studying your ancestors, the easier it is to see past the differences to the similarities. Despite all the modern technology, people are still people, and our basic and emotional needs haven't changed much since the days of Adam and Eve.

Maybe it's due to the various cultural events honoring black, Hispanic, Pacific-Americans, American Indian, and women's accomplishments throughout the year, or maybe it is a new appreciation of old values, but Americans are realizing the pluses of diversity.

This is most evident in articles about the turn-about of the baby boomer generation. Baby boomers, who have been lambasted for creating the "Me Generation," are discovering that "keeping up with the Joneses" doesn't lead to fulfillment. They, and other age groups, are replacing material desire with the need to give their lives to something bigger

than themselves. In the process, they are coming to understand, even appreciate, diversity.

As technological advances accelerate and we're bombarded with more world information and product improvements than we need or want, many folks are refuting these New Age attacks by renewing the traditions of a slower time with an enlightened awareness that it's the differences that make life interesting and, even easier.

And so I watched with misty eyes as the Spanish youngsters expressed old-time courtship through dance, thinking about how my parents met, with an appreciation for such cultural traditions that remind us how alike we all are. No matter the nationality, a yen for freedom and the opportunity for acceptance and love is what got us here...and remembering these basic truths is what will put us back together.



# Europe District braces for change in currency

By Tanya Williams  
Europe District

What has all the colors of the rainbow, but can easily fit in your pocket? It's the new euro. The euro became the common currency for 12 of the 15 European Union (EU) nations on Jan. 1, 1999. At that time, the national currencies became "non-decimal" sub-units of the euro, and conversion rates between them and the euro were irrevocably fixed.

The change greatly impacts Europe District. Most contracts in the district's Corps of Engineers Financial Management System (CEFMS) are in currency that will change to the euro. When the final euro phase-in occurs in 2002, the national currencies will no longer be valid.

For participating EU countries, new government debt, financial markets, foreign exchange, share and bond markets all switched to the euro on Jan. 1, 1999. Direct conversions of national currencies were no longer allowed. This meant that dual currencies were a necessity for each participating nation—their outgoing currency and the euro.

Although coins and bills have not been issued, the new euro is used as scriptural money (checks, money orders, credit cards, payment cards, and electronic wallets). Germany will withdraw legal status from their money on Dec. 31, and Belgium, Greece, Spain, Italy, Luxembourg, Austria, Portugal, and Finland will do so two months later.

## CEFMS reprogramming

Richard Shultz, the district's systems accountant, was in charge of converting CEFMS from host country currency to the euro. The conversion required massive programming changes, and Shultz coordinated this effort with Corps experts and Oracle programmers in Huntsville, Ala.

Contracts, obligations, invoices, and receiving reports are entered into the system in the local currency and the system converts it according to the rate to the dollar. Converting the financial system to the euro was necessary for the database to function properly, and CEFMS was entirely converted in June.

The conversion was transparent to customers of Europe District. The only impact it will have on them is using the new rates to send the district money in dollars.

"The vendors we do business with will only need to convert their billing to the euro and realize that their payments will now also be in euro values," said Shultz. "We've had the capability to cut checks and EFT (electronic fund transfer) in euros for some time now. The problem has been that we haven't been awarding many contracts in the new currency and the hundreds we did have on our books were still in the old currencies. It'll now be a much smoother operation."

## Trials and triangulation

Multi-currency transactions have existed ever since money was invented, but the euro poses unique challenges due to a process called triangulation. You can no longer convert one national currency into another. You must convert from the first currency into euros, then from euros into the second currency.

Euro triangulation involves a maze of rules (including various rounding conventions and the number of decimal places that a transaction must be calculated to) so that no national currency is disadvantaged by exchange. Since the euro is the pivot point of multiple EU currencies, it is an entity in itself, and cannot be completely expressed as a value in another currency.

Triangulation involves:

- Existing national currencies are converted into the euro using a predetermined six-figure conversion rate.



The new euro will bring a standard currency to the European Union nations. (Photo courtesy of Europe District)

*Example*—1.95583 deutschemarks (DM) buys 1 euro.

- The conversion rates themselves cannot be rounded or truncated.

- All conversion rates will be represented as national currency per euro. Therefore, the national currency unit will need to be divided by the euro conversion rate to arrive at the euro value. The result may be rounded to three decimal places. *Example*—Fifty DM divided by 1.95583 equals 25.56459405981 or 25.564 euros.

- The euro amount is then converted into other national currency using the applicable six-figure conversion factor. *Example*—25.264 euros equals 49,498.806 Italian lira.

"Each obligation with a foreign currency balance, like DM, has a dollar equivalent," said Schultz. "We can't just change the DM value and leave the dollar alone. Because the European Community set an established rate for every country, first we have to convert that balance from DM to a euro balance. The U.S. government then sets a rate and that one euro equals so many dollars. After it's converted the first time to euros, we then have to use the U.S. government rate to find the dollar equivalent. There's a dual conversion for every obligation."

It was originally thought that salaries for local national employees would be converted to euros at the same time CEFMS converted. But local national salaries are loaded into the database at the employee's DM salary, and the system converts this amount to dollars at the time labor is charged. Due to the triangulation form of currency exchange, another step would have to be added until these employees start receiving payment in the euro.

## Reluctance

"We're still being billed for local national salaries in DMs, so they'll continue to be paid in DMs until Jan. 1, 2002, when we'll load the euro salaries," said Schultz. "The most confusing part for us now will be the value of our euro obligations. We're used to seeing a much larger balance for a DM obligation, for instance, the rate of exchange has remained around two German marks to one U.S. dollar. The euro balance will appear much smaller and can be confused with the dollar balance."

Evelyn Bugla, a computer specialist in the Information Management Office, says she dreads the switch to the euro. Bugla, a local national, has already seen her buying power decrease. "The EC picked an exchange rate for the German mark to the euro and falsely inflated it. As a result, buying American products is not the good deal for me it used to be."

Bugla says there is also widespread reluctance and near-hysteria among the local population regarding the euro. "People aren't used to converting their own currency. The euro has no historical value. So when people go to the store and see a price marked in euros, they're always going to try to relate that to deutschemarks and, at the poor rate set by the EC, it's going to be much more expensive to us in the long run."



Computer-controlled paving equipment makes building airfields faster and more accurate. (Photo courtesy of Albuquerque District)

# Airfield uses European technology

Joan Meir  
Albuquerque District

Sophisticated European technology new to the U.S. is making construction faster and more accurate at Kirtland Air Force Base, N.M.

Albuquerque District is currently managing construction of the airfield parking apron. About 270,000 square yards of concrete are being placed on 60 acres of apron at Kirtland AFB using no guide strings for the slip form paving operation.

Instead, a \$250,000 piece of equipment uses computers to remotely control the paver, and satellite navigation to guide precise concrete placement.

The new technology hails from Europe and is now getting a lot of interest from U.S. contracting firms and agencies, according to Dale Carver, project engineer. A.S. Horner Inc. got the \$15.8 million design/build contract in September 2000 and opted to use the new technology from Switzerland's Leica Geosystems Inc.

Global position system technology drives and guides the pavers, controlling steering and grade as well as final positioning of the concrete slab. The four legs on the paver move up and down independently of each other, depending on what the computer instructs them to do.

The biggest advantages are set-up time and accuracy.

"Setting up slip form paver guide strings is very tedious and labor intensive," said Carver. "For that, you need a survey crew and laborers to set it up. So we save money in both set-up and labor costs. There is also more of a chance for human error using the guide strings because every placement point is set by the human eye. This technology uses a computer and is very accurate."

A portable batch plant is manufacturing all the concrete on-site. The contractor has been averaging about 1,000 cubic yards of concrete placement per shift.

The equipment is paving 15-inch-thick, 20-foot-wide sections to replace apron that is 50 years old, according to Kent Heyne, program manager. Due to New Mexico's hot daytime temperatures, paving is now being accomplished only at night, beginning around 10 p.m. and finishing up at dawn.

The work is being done in support of the 58<sup>th</sup> Special Operations Wing for the CV-22 "beddown," Heyne said. It's nearly halfway done, and final completion is expected next August.



# Plantings prevent erosion along the Atlantic Intracoastal Waterway

The Atlantic Intracoastal Waterway (AIWW) was built in the 1940s so barges could travel up and down the East Coast protected from attack by enemy submarines.

Defense is less of a consideration now, but the U.S. Army Corps of Engineers continues to maintain the AIWW channel for barge operations, much like the Federal Highway Administration maintains the interstate highway system (another defense-related project).

Maintenance operations consist of removing sediments from the channel. The primary sediment sources are streambanks composed of easily erodable silts and sands. Bank erosion comes from tidal influences, surface drainage, seepage, and wave wash from boat traffic and wind-generated waves.

**Erosion.** Streambank erosion along the AIWW is a continuing problem and particularly affects the disposal areas beside the waterway. Conventional erosion control methods consist of armoring the streambank to make the bank resistant to erosive forces. Using riprap or other structural features to armor the streambank is a costly solution and, therefore, is not used above the wave run-up elevation.

The erodable soils affected by surface run-off need to be stabilized by less expensive alternatives. To that end, a demonstration program was devised by Tommy Socha of Charleston District's Geotechnical Team to illustrate the efficiency of bioengineering along the AIWW.

Socha consulted with AIWW project manager Gary McAlister, who agreed to fund the project through Operations and Maintenance funds earmarked for AIWW maintenance. Socha then invited Dr. William Conner, a forester with Clemson University's Baruch Institute of Coastal Ecology and Forest Science, and State Agronomist Gene Hardee of the Natural Resource Conservation Service (NRCS) to participate in the study.

Clemson and NRCS provided expert technical assistance to determine what species of grasses and shrubs should be used in the various phases of the study. Since a large portion of the AIWW flows through Horry County, Socha and his team met with county representatives to discuss the planned demonstration project. Horry County was interested and made significant contributions of time and equipment during the initial phases of the program.

**Control methods.** The team initiated a demonstration planting on an existing Corps disposal area near Carolina Forest, an 18,000-acre site under development near Myrtle Beach, S.C. The slope along the AIWW was originally covered with a mixture of kudzu on the upper slope and phragmites (a type of reed) and three-square grass on the lower slope. The soils under the kudzu were eroding from runoff across the slope.

The kudzu was removed and the bank graded for planting in July 2000. Trees, shrubs, and grasses were selected to stabilize the slope. But the day after planting began Myrtle Beach was hit with more than 11 inches of rain. The slope was severely eroded, so the project evolved from planting to bank stabilization. Methods used to stabilize the bank included erosion mats, hay bales, and seeding with grass.

**Contour wattling.** Unfortunately, none of the erosion control methods were entirely successful. Hollis Allen, an erosion expert from the Environmental Laboratory at the Waterways Experiment Station was brought in under the Water Operations Technical Support (WOTS) Program. After consultation with district personnel and a site visit, Allen recommended using contour wattling.

Contour wattling packs lengths of woody plant material into bundles eight to 10 inches in diameter laid end-to-end in a trench along the slope contour. Soil is packed



Contour wattling is bundles of woody material buried along the contours of the slope. The bundles sprout and create a living fence. (Photo courtesy of Charleston District)

over the bundles so that about 80 percent of the bundle is covered. The woody pieces in the bundle sprout and create a living fence that traps sediment to protect the slope from erosion.

Allen and Socha collaborated to prepare bid documents and a contract was awarded to Joppa Maintenance Co., Inc. of North Carolina to procure and install the wattlings. Joyce Cartwright recommended using a purchase order under small purchase procedures, which proved very effective. The contractor started installing contour wattlings on Feb. 26.

Allen and Socha helped supervise and inspect the project. The first step was to grade the eroded area using a bulldozer and a backhoe. Then eight-inch trenches were dug on contour at eight-foot intervals where the wattlings were to be placed.

The next step was hydroseeding the slope using a special seed mix, then placing an erosion control blanket on the slope and down through the trenches. The wattlings were laid in the trench and staked down using live willow branches with three-foot-long wedge-shaped stakes.

**Live stakes.** Once the wattlings were secured, they were covered with compacted dirt, leaving two inches of wattling exposed. In five days, the contractor installed 36,000 square feet of erosion control fabric and 3,300 linear feet of wattling.

During this time Larry Hanford of the Environmental Resources Team and Socha installed hundreds of live stakes to help secure highly erodable areas. Live stakes are sharp pointed willow stems about three-quarters to two inches in diameter and 18 to 24 inches long. The live stakes were placed one to two feet apart and driven into the ground leaving four to six inches of branch exposed. These stakes take root in a couple of weeks and form a root mass that secures the soil and halts erosion.

Hanford and Socha also installed about 50 feet of brush layering, a process of digging two to three feet into a slope at a 10-degree angle, laying three to four inches of willow branches, and covering the branches with four to six



Erosion control blankets also help stabilize the slopes along the waterway. (Photo courtesy of Charleston District)

inches of soil. They repeated this step several times, gradually moving up the slope till the entire slope was secured. The entire project was completed in seven days.

With the contour wattles in place, the next step is to plant native plant species between the contours. The slope will be monitored by Conner and evaluated to determine which species are best for erosion control in this environment. Future sites along the AIWW will be chosen for protection using plants and techniques that prove most economical and successful.

(Tommy Socha of the Charleston District Geotechnical Team wrote this article.)





# Emergency Response

## The Corps is There When the Chips are Down

# District has hands full with disasters

By Pete Navesky  
and Mary Beth Hudson  
Tulsa District

Fire, ice, flood, tornado, a bomb...

Those are just some of the many catastrophes that have wreaked havoc on the region and called Tulsa District's emergency operations personnel into action. Since the spring of 1995, the district has responded to disasters (both natural and manmade) of such size and number that one begins to think in Biblical terms.

**Bomb.** On April 19, 1995, Tulsa District and other people from the U.S. Army Corps of Engineers were among rescuers and experts on the scene of the worst terrorist act ever perpetrated on American soil. When a 3,000 lb. fertilizer bomb exploded at the Murrah Federal Building in Oklahoma City, 168 people were killed. The Corps supported the state, the city, and Federal Emergency Management Agency (FEMA) efforts with structural engineering expertise and a team of search-and-rescue specialists.

**Fire.** Later that summer, extreme drought and wind conditions across Oklahoma caused widespread wildfires and brushfires. Tens of thousands of acres of crops, woodlands, and pasture went up in flames. At times, satellite pictures showed most of the state hidden under smoke. The district established a procedure for National Guard helicopters to use Corps lakes and reservoirs to fill air-drop water buckets to combat the spreading flames.

**Flood.** To complete the strange cycle of weather across the region that year, strong autumn rainstorms brought flooding to the Red River and various drainage basins in southern Kansas and northern Oklahoma. Tulsa and Kansas City districts each provided sandbags and technical advice to several impacted communities.

Remember El Nino? In the winter of 1997, ominous flood forecasts almost proved true, but just as many of the lakes across central and southeastern Oklahoma were nearing 85-95 percent of flood control capacity, the rains ceased. However, for more than 30 days, the sun didn't shine, inactivating solar battery panels at some vital sites. This tested the district's hydrologic and hydraulic instrumentation personnel; they added secondary battery backups to many crucial stream gages until the skies cleared and solar battery panels began to operate again.

Things calmed down until Halloween weekend of 1998 when there were severe thunderstorms across the upper



A Corps surveyor takes a measurement of the bombed-out Murrah Building in Oklahoma City. (Photo courtesy of Tulsa District)

Arkansas River watersheds in northern Oklahoma and south-central and eastern Kansas. Flash-flooding in Augusta, Kan., caused a small levee breach and an anxious time in Arkansas City, Kan. The flood crest moved downstream and caused some backwater flooding in segments of that community. Burlington, Kan., downstream of John Redmond Reservoir, also dealt with high river crests. Miraculously, no lives were lost.

Tulsa District provided technical advice and sandbags to communities. Positive interaction with the Kansas Division of Emergency Management during the emergency led to a joint presentation of FEMA's Expedient Flood Fight Training Course for towns in southern Kansas.

**Tornado.** May 1999 brought a widespread outbreak of thunderstorms and tornadoes across central Oklahoma, south central Kansas, and northeastern Texas. Tulsa District dispatched several teams of field and office personnel to survey and catalog damages around Oklahoma City where an F-4 tornado cut a huge swath through the area, leaving death and destruction in its path. The district received missions from FEMA to provide emergency power and debris removal.

Corps contractors and personnel ultimately cleaned up about one million cubic yards of debris from damaged areas and communities across Oklahoma.

**Ice storm.** The much-anticipated Y2K weekend passed uneventfully in the district, but planning for it proved most fortuitous the following winter when a severe ice storm crippled large parts of Oklahoma and Arkansas. This time, the district received FEMA water supply and emergency power missions. Tulsa District, the USACE water contractor, and the Oklahoma National Guard delivered more than 250,000 gallons of bottled water to residents of many Oklahoma communities whose normal water supply was cut off due to power outages.

Besides these responses, in the past five years Tulsa District's Emergency Management Office also sent workers for various response and recovery activities after hurricanes Fran, Bonnie, Georges, and Bret. They also deployed to help with recovery efforts following the wildfires in New Mexico, flooding in Nevada and northern California, levee and flood control works repairs in northern California, and tropical storm Allison.

**Hurricanes.** Tulsa District also established and staffs Southwestern Division's Emergency Power Planning and Response Team. It has deployed not only during disasters like hurricanes Bonnie and Bret, the Oklahoma tornadoes, the Oklahoma winter storm, and tropical storm Allison, but also in off-season. The team, along with troops from the 249th Engineer Battalion (Prime Power) A Company from Fort Lewis, Wash., assisted FEMA by conducting generator Quality Assurance/Quality Control inspections at the Territorial Logistics Center in Fort Worth, Texas, in 1999, 2000, and 2001.

In support of Galveston District's Gulf Hurricane Catastrophic Disaster Planning effort, the team and 249th troops strengthened their working relationships by conducting power-needs assessments at critical public facilities along the Texas Gulf Coast. This joint exercise effort began in 1999 and continues today.



An ice storm and tornado damage are just two of the natural disasters that have kept Tulsa District on the ball. (Photos courtesy of Tulsa District)



# Readiness branches are prepared to respond at a moment's notice

By Bill Peoples  
Nashville District

The Readiness Branches in the U.S. Army Corps of Engineers are constantly preparing to meet the needs of future emergencies and disasters. This preparation keeps them ready to respond to emergencies and handle them in a professional manner.

Nashville District's operation is typical of how Readiness Branches work throughout the Corps.

"Our mission is to be the principal advisor to the commander on all matters related to natural and technological disasters, national security emergencies, and civil disturbances," said Dave Verploegen, Chief of the Readiness Branch. "We provide overall management of emergency operations and planning activities related to emergencies. We coordinate district preparedness and conduct emergency planning, training, and exercises. We inspect all completed flood protection projects annually, or after a major flood."

During emergencies, the branch oversees the district's Emergency Operations Center (EOC) and coordinates with the division EOC, Corps Headquarters' EOC, and other agencies to ensure an appropriate and adequate response to an emergency.

## Crisis teams

The district EOC has undergone an extensive renovation to update equipment and provide a better workspace during emergencies.

"We didn't have near the capabilities in the EOC two years ago, before we remodeled," said Kim Trevean, emergency operations assistant. "Now, we have a video screen and a projector for presentations, six multi-functional workstations, as well as a better phone system and fax; all of which can be used at a moment's notice."

Crisis Action Teams composed of personnel from the district operate the EOC. The Crisis Action Teams and the Crisis Management Team have different roles during an emergency.

"The Crisis Management Team is composed of primary and alternate representatives from each staff section," said Verploegen. "During an emergency, the Crisis Management Team manages the overall emergency, and the Crisis Action Teams operate the EOC."

What many people do not realize is that the EOC is always active, operating on different levels depending upon the situation.

## Always active

"The EOC is always active," said Verploegen. "Right now we're at Level I, which is normal working hours. Level II is increased hours up to 10 a day. Level III would be working weekends, and Level IV is 24/7."

In the last couple of years, the branch has not been called on for deployment. The last major deployment from the district was two years ago.

"This past year has been fairly quiet as far as deployments from the district," said Trevean. "Two years ago we sent about 30 people including our temporary roofing team to Puerto Rico. Some were deployed for three to four months. That was exciting. It's my job to get them out with everything they need and to support them while they are away."

## Exercises

The Readiness Branch participates in various operations annually as part of its continual preparation for emergen-



A Flyaway Kit contains portable high-tech equipment designed to get deployed personnel up-and-running in the field quickly. (Photo courtesy of Nashville District)

cies. These operations help develop both the skills of participants, and relationships among participating agencies. Among its major contingencies is preparing for a possible earthquake in the New Madrid Fault Zone.

"We participate in several operational exercises each year," said Verploegen. "For instance, we're responsible for the catastrophic disaster response for the New Madrid Seismic Zone in Tennessee, and we've been involved in earthquake response exercises this past year."

## IMAs

One unique part of Readiness Branch is its augmentation by reserve officers. The branch is assigned six Individual Mobilization Augmentees (IMAs). Each officer normally performs two weeks of duty with the branch during the year, but can be called-up for extended periods during emergencies.

"We call them mobilization planning officers or engineer planning officers," said Verploegen. "Most are local and have been with us a long time. We can pull them in when we have an emergency. We can also deploy them to help with an emergency. We deployed a Reserve officer for 30 days once to help with a flood on the Red River. They also assist in exercises. For instance, we have a First Army Staff Exercise coming up in Jackson, Tenn., that they'll be involved in. Another area they assist us in is updating our plans."

## Coordination

The Readiness Branch continually coordinates with other agencies which they would work with during an emergency to insure current coordination and planning.

"Coordinating with other agencies like the Tennessee Emergency Management Agency (TEMA), the Federal Emergency Management Agency and others, takes a significant portion of our time," said Verploegen. "Throughout the year we'll have meetings, practice drills, and several

exercises. Sometimes during an emergency, we operate a desk at TEMA."

## High-tech equipment

Nashville District's Regional Response Vehicle (RRV) is one of eight vehicles of its kind assigned to the Corps. The vehicle is managed and maintained by a trained Readiness Branch team. The RRV gives the district tremendous capabilities to support not only district emergencies, but emergencies around the country. It has been deployed as far away as Texas.

"It's been interesting putting the team together because we need drivers, logisticians, information management personnel, and emergency management personnel," said Verploegen. "We've deployed the RRV to North Carolina and Texas during hurricanes."

For the RRV to be ready to go at any time, it must be maintained regularly.

"We perform maintenance on the RRV every two weeks," said James Sowell, disaster response coordinator. "We start it, run the generators, check batteries on the laptops, GPS units, satellite phone, digital cameras, and radios. We have to maintain all that equipment and keep it ready to go."

When personnel from the district are deployed, the Flyaway Kit provides them various types of equipment to function and communicate during an emergency. From laptops to satellite phones, the kit contains state-of-the-art equipment contained in a hard case that can be shipped.

"Each Flyway Kit contains the equipment to get deployed personnel up and running in the field," said Sowell. "It was designed for our temporary roofing team to get them started."

The purpose of the Readiness Branch is to be ready to act in an emergency.

"When a disaster strikes, we have no time for planning," Trevean said. "Plans have to be in place. We have to move as quickly as we can. There's no time for hesitation and second-guessing."





# Allison brings wide variety of work

By Dave Harris  
Seattle District

Since late June, when Tropical Storm Allison brought torrential rains and flooding to Southeast Texas, more than 100,000 people have applied for state and federal disaster assistance. The assistance provided for housing, family grants, and low-interest loans to rebuild has reached almost \$500 million.

The Federal Emergency Management Agency (FEMA) tasked the U.S. Army Corps of Engineers with three main missions in Harris County in the Houston vicinity:

**Power team** – Soldiers from the Corps' 249<sup>th</sup> Engineer Battalion (Prime Power) installed FEMA generators at local hospitals. Contract workers have refueled the generators and maintained them. Most hospitals recently returned to commercial power, and contractor personnel have removed the generators.

**Debris collection** – About 30 Corps employees monitored debris removal operations, and submitted data to FEMA to assure the right people are paid properly.

**Temporary housing** – Savannah District's Temporary Housing Planning and Response Team (PRT) provided hookups for 950 FEMA-provided travel trailers located next to the uninhabitable homes of disaster victims. The travel trailers provide temporary lodging for some of the 29,000 people who need lodging until their homes are restored. New York District's Temporary Housing PRT is designing mobile home parks as suitable sites are located to supplement existing commercial mobile home parks as they become full.

In addition, the Corps estimated that \$34.1 million was needed to dredge the Houston Ship Canal, Galveston Bay system, and other affected channels to restore them to pre-storm condition.

According to Michelle Clark of Galveston District, a Corps team also performed an important environmental mission in the disaster area. The team did hazardous, toxic, and radioactive waste reviews of a potential site for a mobile home park. They determined that the site was outside the flood-plain, looked at aerial photos to determine historical use of the site, visited the site, and wrote a report.

They also performed a National Environmental Policy Act evaluation, checking Endangered Species Act considerations, and other habitat and environmental features. Environmental assessments were being expedited, and "they've been going well," according to Marj Debrot, who heads the Corps team at the Disaster Field Office.

Staff Sgt. Tom Zyzyk of the 249<sup>th</sup> said his team in-



William Lane of Savannah District does a quality assurance inspection of the utility lines on a travel trailer provided to storm victims by FEMA. (Photo courtesy of Savannah District)

stalled six FEMA generator assets at the Texas Medical Center in four major hospitals. They also installed a mobile substation, brought in from Fort Lewis, Wash., and used it to step-down commercial power for critical mobile catheterization labs at Hermann Hospital.

The Texas Medical Center in Houston has more than 10 major hospitals operated by various entities. They include such facilities as the Texas Children's Hospital, the Texas Heart Hospital, and the Shriners' Hospital.

The Prime Power Team started with 14 personnel. Tulsa District's Peter Navesky and Jan Holsomback took turns as Power Team mission managers.

The 249<sup>th</sup> Engineer Battalion is headquartered at Fort Belvoir, Va. It has about 220 soldiers, with companies at Fort Lewis, Wash., and Fort Bragg, N.C., and detachments in Germany, Hawaii, and Korea. The battalion frequently responds to disasters.

Staff Sgt. Tom Zyzyk of the 249<sup>th</sup> described Houston-

area power contractors working at the Texas Medical Center as "absolutely awesome," redoing much of the power infrastructure, which was "devastated. They were replacing many of the transformers and switch gear."

Herman Wine is a project manager from New York District. His PRT did preliminary work to mobile home parks to accommodate displaced disaster victims. As of press time, the team is awaiting approval to go ahead with design. If approved, FEMA wants construction within 20 days. Wine said this timetable was difficult, especially since contractors are reluctant to take on those restraints. But he said his team could do work short of awarding the construction contract (identify potential sites, preliminary coordination, complete surveys, and produce plans and specifications) to facilitate the work in a reasonable time.

In the mobile home parks, the homes are provided by FEMA, often paying 75 percent and cost-sharing 25 percent with the local government. They are normally intended for temporary use for one year to 18 months. Often victims have no other place to go. As they get back on their feet, they may be able to buy the mobile home. Often the state or local concern eventually takes over the facility.

In July the Corps transitioned from emergency response to project management and moved into the recovery phase. Future work depends upon approvals and funding for potential design and dredging work.

As August arrived, federal and state disaster assistance for families and businesses stood at \$497 million, which includes \$148.4 million approved to help with temporary housing costs, and \$194.1 million approved in U.S. Small Business Administration low-interest disaster loans. The state also has approved \$154.6 million in grants for disaster-related needs.

To date, more than 40,000 residents of the 31 counties included in the disaster declaration have visited the Disaster Recovery Centers.

"Our main focus now is making sure that all individuals needing assistance are registered and that everyone is living in a safe environment," said Scott Wells, federal coordinating officer for the recovery effort.



Providing emergency power was a primary mission after tropical storm Allison. These generators are at St. Joseph's Hospital in downtown Houston. (Photo courtesy of Seattle District)





Tropical storm Allison dumped about three feet of rain on the Houston area, killing 23 people and forcing 22,000 people from their homes. (Photo courtesy of Savannah District)



Karen Prosser (left) of Vicksburg District, and Allen Williams of Savannah District talk to people living in temporary housing provided by FEMA and the Corps. (Photo courtesy of Savannah District)

# Allison 'business as usual' for EM

By Verdelle Lambert  
Savannah District

It's not likely any girls born in Houston for the rest of this year will be named Allison. The first tropical storm of the season, Allison dealt the city a one-two punch, dumping a load of rain on June 5, and then circling back on the weekend to unload more misery. Allison's three feet of rain turned neighborhoods into lakes and roads into rivers. The storm killed 23 people, forced 22,000 from their homes, and caused up to \$2 billion in damage.

## Savannah's role in Houston

Fifteen team members from Savannah District were among the cadre of U.S. Army Corps of Engineers employees brought in by FEMA (Federal Emergency Management Agency) to help in the recovery effort.

"Savannah got the call to staff the temporary housing (travel trailer) mission in Houston because Southwestern Division doesn't have a housing team," said Mickey Fountain, chief of the district's Emergency Management Division. "The Corps has five temporary housing teams—one in Savannah, St. Paul, New York, Huntington, and Omaha districts. They're called up on a rotational basis, and Savannah happened to be sitting at number one when Allison hit."

FEMA authorized \$500,000 for the Corps to survey potential trailer sites, identify utility connection points (electrical, water, and sewer hook-ups), determine where to place the trailer, and perform quality inspection of utility hook-ups by the contractor. As of Aug. 10, the Corps had installed 242 of the 950 trailers scheduled for placement at individual sites.

"The trailer mission is still ongoing in Houston," said Judy Patterson, Savannah's natural disaster manager. "There is also a big, ongoing temporary housing mission in West Virginia, and we don't know how many housing teams will have to be rotated out of there, so the decision was made to backfill us in Houston with a roofing team from St. Louis." (Normally, a planning and response team is deployed for 30 days, then another team comes in for 30 days.)

## Disaster teams

Allison was demanding, but it was pretty much "business as usual" for Savannah District, if emergency response can ever be called "usual." The district has two planning and response teams—one for power and one

for temporary housing. Savannah got the power mission in 2000, while the housing mission dates back to Tropical Storm Alberto in 1994, which resulted in the largest temporary housing mission ever accomplished by a Corps district.

"Alberto mainly flooded the low-income housing area in Albany, Ga., and there was no place for the people to go," said Patterson. "We built 11 trailer parks and installed 2,126 trailers in Albany. Because we had more experience in temporary housing than any other district in South Atlantic Division, we got the mission."

Corps recovery teams can "hit the ground running" on all FEMA-assigned missions except temporary housing. And FEMA has expedited their work by setting up advance contracting initiatives for water, ice, power, and debris.

"They have contractors in place for those things, but there's no advance contracting initiative for temporary housing," said Patterson. "Everything must be done from the ground up, starting with bid schedules and scope of work, and that takes time. You can't just go in and say 'I want a trailer with utilities hooked up.' You have to go through the contracting process, and that slows us down."

## Other missions

The National Oceanic and Atmospheric Administration (NOAA) has predicted 12 named storms, eight hurricanes, and three intense hurricanes (category 3-5) for the 2001 hurricane season (June 1 to Nov. 30). NOAA recently updated its forecast from a normal season to slightly above-normal activity for the rest of the Atlantic hurricane season.

To maintain a high state of readiness, the district's Emergency Management Division constantly prepares for the next disaster. They coordinate with state and county emergency management officials and FEMA officials throughout the year. They publish "Hurricane Notification Evacuation and Recall Procedures" to tell employees how to prepare for a hurricane, what to do in an evacuation, who to call in the district to report their location and availability, etc.

"We're constantly updating our notification plans, hurricane plan, natural disaster plan, or preparing operation plans," said Tatjana Tessner, Emergency Operations

Coordinator.

Recently Maj. Gen. Phillip Anderson, South Atlantic Division (SAD) commander, tasked Savannah District to support FEMA in Puerto Rico if a category 2 storm or higher hit the island. Analyses of hurricane patterns indicate that a storm of that magnitude hitting Puerto Rico would also most likely hit Florida, and Jacksonville District would not be able to staff an ERRO (Emergency Response and Recovery Office) in both locations.

"Naturally, our biggest push now is on developing plans for setting up an ERRO in Puerto Rico," said Patterson. "We have to identify the people that will go, which positions they will fill, the logistics of getting them there, who buys the furniture, who does the computer equipment, things like that."

For three days in July Savannah held emergency management exercises, something they do annually unless the district is affected by a real emergency.

On Day 1 the Emergency Management Division reviewed hurricane plans and procedures with the division chiefs. A FEMA representative from Region 2 (Puerto Rico and the Virgin Islands) and a representative from SAD participated in the review.

On Day 2, the division chiefs played out a scenario where a hurricane strikes Puerto Rico.

"We had to go through all of our actions, starting with who'll be deployed and what subsequent steps we should take," said Barbara McComb, emergency management assistant. Two representatives from Jacksonville District participated in that scenario.

The scenario on Day 3 had a storm hitting Savannah. The city is evacuated, and Emergency Management has to bring about 20 key people back into the city to reconstitute the district.

All emergency management offices across the country are set up by regulation with life-support equipment—generator, freeze-dried food, MRE (meals ready to eat), separate air-conditioning system that runs off the generator, shower, full kitchen, battery-operated phone, satellite phone, cell phone, and high-frequency radio. Only drinking water would have to be shipped in.

"If we were hit by a hurricane, we'd put a liaison officer in the Chatham County emergency management office to relay information back to us," said Patterson. "We could provide sandbags should they need it, but the only other way we could assist the county is if it's beyond the state's capability and federal help is requested."

In case the entire city is evacuated, the district has an alternate relocation site for its emergency staff at the Thurmond Powerplant.





# Disaster relief lessons, technology used during Cobra Gold exercise

By Maj. John Leighow  
Alaska District

Since last November, Alaska District's Emergency Management Branch has led a new initiative for the U.S. Army Corps of Engineers called Field Force Engineering (FFE). This initiative, developed by Lt. Gen. Robert Flowers, Chief of Engineers, is a direct response to the Army's transformation to a more responsive, mobile force, and to engineer lessons learned in Haiti, Bosnia, and Kosovo.

## Disaster response model

FFE is a new Corps mission, but it is similar to the mission we execute for the Federal Emergency Management Agency (FEMA) during emergencies. Within 24 hours after a disaster, FEMA taps into the Corps' capabilities to handle a variety of tasks in disaster relief and related civil operations. (The amount of work is between \$100 million and \$500 million per year).

The Corps provides these capabilities by maintaining a workforce organized, trained, and equipped to switch rapidly from programmed work to disaster response. FFE would emulate the FEMA model, and provide engineering service capabilities to support the war-fighter. On-the-ground experts would use reach-back technology (tele-engineering) to get help from technical experts in USACE centers of expertise and laboratories.

This effort would focus on complex contingency engineering problems in a theater of operations, such as base camp and infrastructure development.

Tactical engineer units no longer have the robust capability or technical expertise they had 10 years ago. The Corps' capabilities would supplement current tactical engineer unit capabilities and, ultimately, integrate with them.

## Test

To develop and test this initiative, the Corps selected Pacific Ocean Division (POD) as the lead division, through its support of Pacific Command, with Alaska District as the main effort.

The test took place during Cobra Gold, the annual joint forces exercise in Thailand. The exercise was only six months away at the time of the tasking, which presented a challenge to develop an implementation plan, training, obtaining equipment, coordinating efforts, and identifying and preparing personnel to deploy overseas.

## Teams

After several implementation workshops, POD tasked each district to field a team of volunteers in the engineering, environmental, and real estate fields. These people, plus an Army officer team leader, made up the Forward Engineering Support Team (FEST), which deployed and augmented the exercise's military engineer staff.

FEST personnel preparations involved obtaining a series of immunizations, security clearances, and training requirements before deploying. Once positioned with the military staff, their mission was to identify Corps support issues to facilitate JTF operations and submit work requests through POD to USACE.

Other teams in FFE were the Base Development Teams (BDTs) and the Infrastructure Assessment Team (IAT). The BDTs relied on the Theater Construction Management System (TCMS) software to provide stan-



Alaska District's Emergency Management team poses with their tele-engineering equipment and Lt. Gen. James Hill, I Corps commander, at the Thai school project site. From left to right are Clarke Hemphill, Wipawi Vanadit-Ellis, Maj. James Leighow, Lt. Gen. Udomchai, Deputy Commander of the 3rd Thai Army, and Hill. (Photo courtesy of Alaska District)

dard construction products. The BDTs' mission was to provide installation-level master planning and facilities design expertise for intermediate staging bases, base camps, forward operating bases, and displaced personnel camps.

The IAT is a division-level team for infrastructure assessments for strategic/operational military deployments and civil-military operations. Their mission was to develop regional-level infrastructure assessments, and to provide design solutions to engineering problems outside of the base camps.

## Tele-engineering

FFE operations within the Pacific Ocean region relied heavily on the latest in reach-back technology called tele-engineering (T-E), developed by the Corps' Engineer Research and Development Center. The technology is a mobile video-conferencing suite with data download capabilities that communicates by satellite hook-up. Through reach-back, Corps capabilities can be delivered on-site in near-real time, without deploying technical experts. Thus, the Corps could establish a minimal forward presence, but still deliver the full range of USACE capabilities.

## Cobra Gold

So on May 7 Alaska District deployed the Corps' first FEST team to demonstrate our capabilities and commitment to support the war-fighter.

Cobra Gold was a good place to test the concept. It is an annual joint exercise held in Thailand. The Army, Navy, Air Force, and Marines of Thailand, Singapore, and the U.S. join to conduct a peace enforcement exercise in Southeast Asia.

The FEST team supported I Corps from Fort Lewis, Wash., the Joint Task Force Headquarters (JTFHQs). POD's Emergency Operations Center (EOC) was "mission control," with Alaska and Hawaii district's EOCs and the Engineering Research and Development Center providing support.

## Projects

Projects conducted during the exercise were a force protection analysis for the JTFHQs, three joint logistics over-the-shore analyses, a real-world bridge reconnaissance, assessments of major roads and highways, infrastructure assessments of airfields and ports, multiple refugee camp designs and development, environmental projects for a simulated chemical fire, and flood analysis of possible dam breaches which could affect mobility and operations.

Sewage problems at a Thai school provided a real-world design project opportunity. The school had three outdoor latrines which were contaminating local water sources. Using T-E reach-back, the FEST and POD designed a septic tank with local materials, which was submitted to Thai officials as a solution.

## Success

Overall, Corps leaders ruled the exercise an overwhelming success. Lt. Gen. James Hill, I Corps Commander, called FFE a valuable asset, which garnered huge support from the I Corps staff, and requests for participation in future exercises.

The Corps' FFE initiative promises to have far-reaching effects on the way USACE conducts business in support of the military, FEMA, and daily project activities.





Rapid Response Vehicle 03 (RRV-03) from Nashville District was set up outside Savannah District headquarters.

# RRV

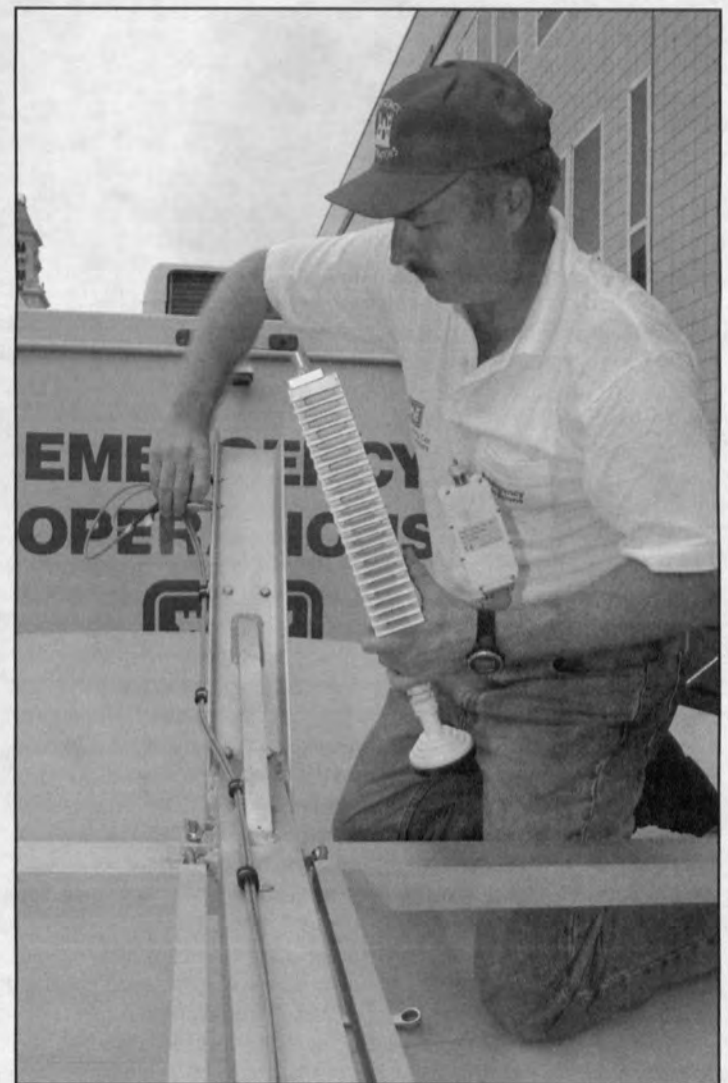
*Rapid  
Response  
Vehicles  
ready to  
roll to any  
emergency*



James Sowell, disaster response coordinator, checks out the satellite phone. All of the RRV's equipment is checked out and maintained every two weeks.



Jared Gartman, emergency management specialist, makes sure the computer server is on-line.



Mike Swing, an information management specialist, installs the satellite transponder on top of RRV-03. Any communication function that would require a cable can be carried out via satellite on an RRV.

Photos by Jonas Jordan  
Savannah District

## Emergency Response

The Corps is There When the Chips are Down





# Ancient skill turns rocks into art

By Larry Reeder  
Alaska District

Looking for a leisure-time activity that is intellectually stimulating, physically demanding, requires skill and technical accuracy, soothes the spirit, is therapeutic, and results in a work of art?

Well, how 'bout breaking rocks?

Did you know that flintknapping (the skill of working rock into useful tools) is part of your family history? Each of us had ancestors back in the Stone Age. For them, knowing how to make usable tools from the stones was a survival skill that meant the difference between living (and living well) and that other alternative.

Most of us associate arrowheads only with American Indians. They were the last cultural group in North America to use Stone Age skills, but all of us, Indian or not, have arrowheads and other stone tools as part of our heritage.

And flintknapping, an almost lost skill and art form, is experiencing resurgence today. We're still few in number, but the interest is growing. There are even occasional "knap-ins" where flintknappers gather to share what they've learned.

The dictionary defines knapping:

- To strike sharply.
- To break or chip with a sharp blow, or to break stones by striking sharply.

While this is technically correct, it's an over-simplification. To "knap" a stone with the purpose of making usable tools or a work of art requires a lot more than just knocking two rocks together.

I became interested in flintknapping as a young boy growing up in Oklahoma. Hunting arrowheads in the cultivated fields, my brother and I just couldn't wait for each new rainfall, because we then could go find more flints washed out of the ground. Who were these people who left these wonderfully made objects just lying out in the field? And *how* in the world did they do it?

I made my first "arrowhead" at about age eight — it was crude, thick, not very



Larry Reeder with his flintknapping tools and some of his finished arrowheads and spearheads. (Photo courtesy of Alaska District)

sharp, and wasn't big enough to do much work. During my teenage years I continued to figure out how this was done, with limited success. Then I laid it aside when I had to earn a living.

Some 30 years later (about four years ago) I determined to study flintknapping in depth and see if I could finally become proficient in this ancient skill. The Internet came to the rescue with a wealth of information. I also bought several instructional videos. With that help, I'm now perfecting the techniques and successfully making large usable points and blades.

First is finding the right type of stone. Then you ask the questions. Does it require heat-treating? Where do you hit it and with what? What angles are involved? Is the edge strong enough to allow the blow to be transmitted into the stone or will it crush? What tool do you want to make?

I've found that almost any crypto-crystalline siliceous material with conchoidal adhesion planes will do. (*Translation* — small-grained rocks with high silica content that fracture in a predictable conical pattern.)

I use flint, chert, chalcedony, agate, jasper, sardonyx, opal, quartzite, basalt, onyx, carnelian, nephrite jade, dacite, novaculite, hematite, obsidian, and glass, to name a few. There are numerous types of each of these. For example, there are several hundred types and sources of chert alone. Some are high quality as found, some need to be "cooked" (heat-treated, which is a whole field of expertise by itself), and some are unworkable no matter what you do to them.

The easiest materials to learn with are glass or obsidian, but they are brittle and break rather easily.

To date, my favorites are Burlington

chert from Missouri and heat-treated Frisco chert from south-central Oklahoma. Another favorite is Brazilian agate — very hard, but it makes a durable edge. The sharpest edge known to man is obsidian; obsidian blades are used in modern surgery.

Several of the rocks on my list are gemstones. They make beautiful, and valuable, works of art if properly crafted. Even a rather small original, aboriginal gemstone point can be sold for several hundred dollars today.

This last point is why the modern flintknapper's code of ethics mandates that contemporary artists sign and date their work, so they cannot be confused with aboriginal items and sold as such.

In general, the methods used in flintknapping fall in two general categories — percussion and pressure flaking. Each has its own special techniques that exploit the cone-fracture character of the stone. Percussion is to hit the stone (usually with another stone, antler billet, or copper bopper) to fracture a spall or flake off of it. Pressure flaking uses sharp-pointed bone, antler, copper, and even wood to "push" a flake off the edge.

The two methods are commonly combined to complete a point. In most cases, percussion is used to spall and rough-out a bi-face, then pressure flaking is used to finish the edge and notch the point for hafting (fitting a wooden handle).

Now that I know how to make arrowheads, my next challenge is making the arrows and a wooden bow to shoot them. I'd also like to work on making larger darts and an atlatl (spear thrower) to throw them.

Flintknapping is a soothing pastime (at times a frustrating challenge) that results in primitive stone tools and, hopefully, a work of art. What more could one ask from a hobby? Well, maybe tons more high-quality stone and the time to work it would be nice!

(Larry Reeder is the chief of Regulatory Branch in Alaska District.)

## NED trains for future missions

By Ann Marie Harvie  
New England District

Today's Army can be ready to deploy anywhere at a moment's notice, and the U.S. Army Corps of Engineers is one reason this is possible. The Corps' mission during a deployment is to make sure there is a place for the Army to deploy to — the Corps builds the camps and bases that house the troops.

As the armed forces continue to streamline, civilians are depended on more and more during deployment. To make sure its civilian volunteers are prepared to meet the requirements for infrastructure assessment and to base construction, North Atlantic Division (NAD) held a field force training exercise at New England District (NED) Headquarters on June 18-23.

**Teams.** Operation Rapid Trainer took an infrastructure assessment team (IAT) and three base design teams (BDT) made up of people from the various NAD districts and trained them in accordance with the ENLINK/Field Force Engineering doctrine under development by Corps Headquarters.

The IAT provides technical engineering for strategic/operational military deployments and civil-military operations to determine the best location for the base camp. They provide expertise to support everything from early entry operations through redeployment (return of troops to the U.S.). The IAT has a master planner, structural (civil) engineers, prime power technician, environmental engineer, airfield (civil engineer), ports/rail (civil engineer), civil engineer (civil utilities), and a real estate specialist.

The BDT provides installation-level master planning and facilities design expertise for intermediate staging bases, base camps, forward operating bases, and displaced personnel camps. BDT team members are an architect/master planner, geotechnical engineer, civil engineers (utilities/sanitation), electrical engineer, environmental engineer, mechanical engineer, structural engineer, computer-aided drafting and design technician, and cost engineer.

**Training.** Training sessions during the exercise included Field Force Engineering update, an introduction to the military, scenario briefing, civilian prepara-

tion for contingency operations, deployment planning considerations for a DA civilian, staff decision making process/mission analysis, contract execution and administration, and the capabilities of the USACE labs and the centers of expertise.

The second day of training included a scenario update and classes on real estate planning in the area of operations, district communication capabilities, operational and engineer logistical planning in developing a base camp, environmental considerations, force training requirements, and anti-terrorism force protection.

The final day of training included the capabilities of the tele-engineering system, and an introduction into the theatre construction management system.

**Challenges.** "I learned that the Army and the Corps are developing some interesting, comprehensive, and useful tools to enable engineers to design in the field and reach back to the States for information and assistance," said Thomas Ayau, a BDT member.

The teams broke out into separate conference rooms to

Continued on next page



## Flood of 2001

# Midwest praises recent flood action

Article and Photo  
By Mark Kane  
Rock Island District

In January and February it was already on the lips of many people who grew up along the Mississippi River...flood! It had been awhile since most people could remember a winter where snow covered the ground. Sub-zero temperatures and record snowfall had people asking, "What's the chance it will flood this spring?"

They still remembered the Flood of 1993, and Rock Island District's employees were hoping for the best, but preparing for the worst.

### Model program

After the Flood of 1993, the district developed a model program for how the Corps interacts with levee districts. Because of the program, the organization of the flood area activities in Rock Island District is now more structured and in-tune with the area levee districts. This program has made the flood area engineers the central point of contact for levee districts along the Mississippi, creating "One Door to the Corps."

Flood area engineers are now involved with communities during the entire process, from levee inspections to assistance during high water. Corps support during high water has improved considerably because the same flood area engineers also inspect levees during non-flood events.

Having flood area engineers assigned to each levee district and working with the communities all year long has allowed communities to develop a relationship with the engineers. The district's Chief of Emergency Management, Terry Stieger, has been the major proponent of this way of doing business.

### Behind the scenes

"Coordination and teamwork really define my guys," said Stieger. "There comes a time when a supervisor hits a level of trust with his crew and, because of the continued teamwork and dedication, I hit that level of trust long before the flood hit this area."

On April 15, when headlines began to read, "River hits flood stage," district per-



Corps emergency workers inspect a sandbag levee holding back floodwater in a small Midwestern town.

sonnel were already well into crisis mode. By April 18, flood crest projections by the National Weather Service predicted a crest of 21.5-22.5 feet in the Quad Cities, very close to the 1993 record.

While scenes from the 1993 flood played on the television sets of America, district employees officially put the Emergency Operations Center into 24-hour operation.

District surveyors marked buildings along River Drive at 20- and 23-foot lev-

els to guide the workers who placed 55,000 sandbags to keep water out of downtown buildings. Lock and dam personnel on the Mississippi River pulled motors and limit switches in gate pits, and sandbagged.

On April 18, the *Dubuque Telegraph Herald* quoted Leonard Ernst, Lockmaster of Lock and Dam 13, "We hope the predictions are off by six inches or so, but they're talking more rain, and it all matters when the levels are this close."

### 1993 still fresh

"1993 is still fresh in our minds," said Bill Gretten, Operations Division, in the same issue. "We learned a lot from that flood. Now we know what to do at each stage, what measures to take to flood-proof our buildings. We're sharing new ideas up and down the river, too."

Those ideas came from numerous district flood area engineers scouring the banks of the Mississippi and coordinating flood-fighting techniques with people who live in the communities threatened by the river.

"The Corps of Engineers is working

with us," said Lisa McCluskey, Community Relations Coordinator of Moline, Ill., in the *Rock Island Argus/Moline Dispatch* on April 20. "They've been out inspecting sandbags, dikes, and residences of River Drive."

### Logistics

Preparation and coordination sum up the district's efforts at LeClaire Base, LeClaire, Iowa, and Quincy, Ill. Through the hard work of personnel at both sites, 1,523,600 sandbags, 574 rolls of plastic sheeting, and 61 pumps were dispersed to cities and towns along the river.

### Flood survey

Lt. Gen. Robert Flowers, Chief of Engineers, came to the Quad Cities on April 22 to assess area flood damages and discuss flood-fighting procedures with city officials.

"It's excellent, obviously; very well done," said Flowers of the district's flood efforts. "The public works directors and everybody else associated with this has praise for the Corps and what the district has done. It's been really, really good. It's a model, and a great example of how things should be done."

### Innovations and expertise

On May 1, the *Burlington Hawk Eye* reported Mike Pieper of Wever, Iowa, had a big stake in the stability of the Green Bay levee system. To fight the high water this spring, Pieper designed a tile system, similar to those used by farmers for decades, to drain water away from the levee. He installed the system in two test locations on April 24.

"We started doing this at the part of the levee where we had the worst seepage problems, and it dried it up in a few days," Pieper said. "If you came here last week, you'd have sunk up to your knees. Now you can walk on top of it."

In addition, flood area engineer Mark Clark's expertise was called on near Niota, Ill., on April 27, to a levee where a softball-size boil spotted a week prior had grown to the size of a basketball in only 48 hours.

Clark said taking preventative measures and creating a sand and gravel base seemed to work and the boil activity was slowing down.

"That's what we want to see," Clark said in the *Burlington Hawk Eye* on April 29. "Continued growth of the boil could cause an undermining of the levee, but we feel we've got the situation pretty well remedied."

### Sigh of relief

Today, the Mississippi River is below flood level at almost every site in Rock Island District. The flood will cost the district more than \$12.9 million in repair and cleanup costs.

## Rapid Trainer

Continued from previous page  
conduct the two-day exercise to plan the base location, then design it before the final session on Saturday.

### Challenges, success.

The exercise brought difficult challenges at times. "Not knowing the capabilities of the 249<sup>th</sup> Engineer Battalion (Prime Power) was a problem," said Ayau. "But, after talking to the Prime Power NCO, those answers were rather clear and simple."

At the end of Rapid Trainer, the teams met for the final day. Three BDTs presented their base designs, and the IAT gave their presentation. A training and exercise after-action review followed.

"I thought the exercise went well," said Ann Laster, and NED real estate specialist. "It gave me insight into how many different areas of expertise work together to select, design, and build a base camp. I think bringing together personnel in different areas of expertise to work together is good practice for actual deployment."



# Fort Hood HTRW project nears end

By Anita Horky  
Fort Worth District

Fort Hood, Texas, will be one of the first installations in Forces Command (FORSCOM) to close its facility investigation program by the end of this fiscal year, thanks to the teamwork of the installation, Fort Worth District, and other agencies.

"When you have various entities involved, agreement on situation resolutions is hard to accomplish," said Mary White, an environmental protection specialist at Fort Hood. "But in Fort Hood's RFI, all the parties worked hard to come to effective and efficient solutions to situations that arose. The partnering was the main reason for the success of Fort Hood's RFI project."

An RFI is a Resource Conservation and Recovery Act Facility Investigation. It determines if solid waste management units, such as abandoned landfills and underground storage tanks, are contaminating the environment.

In 1994, the Texas Natural Resource Conservation Commission (TNRCC) identified 40 sites at Fort Hood requiring an RFI. With limited funding available and time constraints imposed by the TNRCC, Fort Hood hired Fort Worth District to complete RFIs on two sites.

"We coordinated with the TNRCC during development of the RFI work plans, so there was minimal review by the TNRCC and few comments," said Debbie Perrin, who worked on the RFIs. This saved Fort Hood time and money. The district finished the RFIs and recommended no further action on the two sites.

Working with Fort Hood, state regulators, and contractors, Fort Worth District then prepared RFI work plans for the remainder of the identified sites. The district scoped, negotiated, and awarded contracts for field investigations, assessments, remediation, and closure activities; provided technical assistance; and reviewed reports for submission to TNRCC.

"It was important to make sure the TNRCC submittals were thorough and complete to allow for regulatory concurrence without requiring additional field work and numerous rounds of regulatory reviews," said Henry Kasten, who oversees the environmental work at Fort



Investigators at Fort Hood, Texas, need to wear protective gear. (Photo courtesy of Fort Worth District)

Hood. "It was also important to ensure Fort Hood's funding was well spent."

"The Corps was instrumental in handling the technical oversight provided during fieldwork, and also in reviewing any changes or modifications to the original work plan to accommodate situations that arose," White said. "As part of the RFI project, I felt that Fort Worth District addressed all of my concerns in a timely and satisfactory manner. Any challenges that arose were resolved and all parties involved were kept abreast of the situation."

By the end of 2000, the TNRCC had reviewed and approved RFIs with no future action for all but one of the sites.

"Fort Hood reached the FY99 goal of closing out the investigation portion of the RFI," White said. "With continued support, Fort Hood will be one of the first installations in FORSCOM to close out the RFI by the end of FY01. Because none of the sites required remedial action or long-term monitoring, Fort Hood should be able to close out the restoration program."

HR corner

## Distance learning saves time, money

By Gary Andrew  
and John Bramblett  
Headquarters

Technology can offer a cost-effective alternative to formal classroom learning. The costs of bringing in a renowned lecturer, temporary duty expenses for trainees, and printed materials for a seminar all add up to an enormous professional development budget. The Distance Learning Program of the Professional Development Support Center (PDSC) offers a solution that provides high-quality professional development within a more reasonable budget.

John Bramblett, Chief of the Distance Learning Program, transmits learning materials to nearly 7,000 students a year. Keeping up with ever-expanding technological innovations is a major challenge for the five-person program. Customers from inside and outside the Corps come to the program with a diverse set of needs and requirements. Bramblett's unit addresses these needs through exportable (video and CD-ROM-based) courses, video teleconferencing, and training via the Internet.

Although the Computer Age with its Internet, high-speed access, and multi-tasking is all the rage, Bramblett says he knows that many trainees have misgivings about receiving instruction outside of the traditional lecture method. The instruction offered by Bramblett's area "replicates" the classroom, simply offered from a distance.

Distance learning today incorporates enough multimedia and interactivity to offer visual and auditory stimuli, which addresses the needs of multiple types of learners.

"Studies show there's no significant difference in outcome from distance learning as opposed to the traditional instruction, although courses requiring a lot of 'hands on' are perhaps best served in the classroom," Bramblett said.

He admits that distance learning requires more discipline and focus. The lack of human interaction is the single area that still needs improvement. He said he would support setting up "learning centers" to facilitate site training and allow USACE trainees to detach themselves from their immediate work environment.

Since 1985, Bramblett has seen distance learning evolve from concept to reality. It evolved from correspondence courses to video-based training to many multi-media learning opportunities. Today's training includes computer-based training, video-conferencing, and combinations of all the above. Distance-learning's main advantages are that it makes schedules easier to maneuver, and cuts out travel factors.

A review of the Corps' current curriculum is underway to ensure that the courses offered remain relevant and support the missions and strategic direction of the Corps. This review, sanctioned by the USACE Learning Advisory Board, will determine if each course is still needed and how it can be provided economically. The review is likely to identify additional courses to offer by

Distance Learning media.

The Distance Learning Division has earned several awards. At Telecon XVII in 1998, they garnered two first place awards in teleconferencing. Most recently, Bramblett's team and support agency (Tec Masters, Inc.) earned a first place and the Communicator Award for a promotional piece, "Secrets of Fort Hunter Liggett."

But the staff is not resting on their laurels. They are developing a series of new online courses. The new offerings include prevention of sexual harassment (POSH), financial management, wetlands, Corps Path (a self-assessing, self-affirming course), project management business process, and Gallup Leadership Competency training.

Also in the works are video teleconference training for discussion leaders of the PMBP program, and "Safe Self," a course focusing on tactical communication for rangers. Such courses often represent a 12-month development sequence that includes task analysis, target audience assessment, task requirements, validation surveys, converting tasks into learning events, formation of objectives, measurements and course materials, and distance learning delivery methods (i.e., CD-ROM, videos, and Internet).

If you would like further information about distance learning offered through PDSC, contact John Bramblett at (256) 895-7417, or visit the Website at <http://www.pdsc.usace.army.mil>.



# Around the Corps

## Castle Ball

All officers, enlisted, and civilian members of the U.S. Army Corps of Engineers and their guests are invited to attend the 2001 Castle Ball on Sept. 22, 6:30 p.m., at the National Press Club at 529 14th Street, NW, in Washington, D.C.

The ball will begin with a reception and cash bar at 6:30, and will include dinner, entertainment, and dancing. The menu includes porcini pasta, roasted lobster, Caribbean grilled chicken, jicama salad, and chocolate torte.

Dress is Army Mess Dress or Army Blue with bowtie. Civilian dress is black tie optional for men and after-five dress or ball gown for women.

Cost is \$60 per person. Enlisted personnel Sergeant First Class and below should contact protocol for special tickets. Reservations with checks must be received by the USACE Protocol Office no later than Sept. 17, and should be mailed to Protocol Office, U.S. Army Corps of Engineers, 441 G Street, NW, Washington, D.C. 20314-1000.

Reservations should include name, first name of spouse or guest's full name, title or directorate, e-mail address, and day and evening phone numbers. For further information, contact Margaret Burke, USACE Protocol Office at [margaret.m.burke@usace.army.mil](mailto:margaret.m.burke@usace.army.mil).

## Small business awards

The Corps has received two awards for excellence in using small businesses to accomplish our missions. On

Aug. 16, Patricia Johnson of St. Paul District received the Army Small Business Specialist of the Year Award. Lt. Gen. Robert Flowers, Chief of Engineers, accepted the Command Plaque of Excellence that will hang in Corps Headquarters for one year.

This is the second time in four years that the Corps has received these awards.

Both awards were presented in the Executive Hallway at Corps Headquarters by Tracey Pinson, Director of the Secretary of the Army's Office of Small and Disadvantaged Business Utilization (SADBU).

"This is the best part of my job, to recognize people who have done an outstanding job in the small business program," said Pinson. "Obviously myself and Bernie Ford (director of the Corps' SADBU program) can't be there where the contracts are awarded, and a lot of times it can be difficult out there. We know that, and we want to recognize that we have good people in the field who are working with contracting officials to make the Army the best small business program in the federal government. In addition to the individual award, the command gets to display a plaque to show that they are re-

sponsible for the individual's contribution."

## Water agreement

New Mexico and federal water managers have signed a water conservation agreement to protect the endangered Rio Grande silvery minnow. The Corps, New Mexico, New Mexico Attorney General, and the Department of Interior signed a three-year agreement to create a conservation pool and make water available to keep the river flowing sufficiently to preserve the minnow.

The agreement allows the Bureau of Reclamation to call for up to 30,000 acre-feet of water each year for three years to promote the minnow's recovery. New Mexico will make available conservation water stored in Jemez Canyon and Abiquiu reservoirs.

The agreement also calls for relocating the San Marcial railroad bridge. The river bed has risen to just a few feet below the bridge, reducing channel capacity. The New Mexico Interstate Stream Commission and the Corps will cost-share the relocation.

The agreement will also satisfy an element of a Reasonable and Prudent Alternative (RPA) for the biological opinion issued by the U.S. Fish and Wildlife Service regarding federal discretionary activities of the Corps and the Bureau of Reclamation related to water management operations.

In addition to making more water available for the minnow, there are eight separate habitat improvement projects that are about 60 acres in size that are also required in the RPA.



Lt. Gen. Robert Flowers, Chief of Engineers, congratulates Patricia Johnson. (Photo by F.T. Eyre, Headquarters)

# Rangers, exhibit teach Scouts conservation

Photos courtesy of Pamela Doty, St. Louis District



Station 2 of "Hydrosphere" features a hands-on exercise using hand pumps, flush toilet, bathtub, shower, sink, and water drain.



"Hydrosphere," the U.S. Army Corps of Engineers' water resource exhibit, was featured at the National Scout Jamboree from July 23 through Aug. 1 at Fort A.P. Hill, Va.



Rodney Daum, a park ranger with Pittsburgh District, briefs a Scout during the hands-on portion of the "Hydrosphere" exhibit.



# Ranger's class inspires life-saving

The Fletcher family of Rocky Face, Ga., has good reason to be grateful for the U.S. Army Corps of Engineers' water safety programs.

On June 10, Jay Fletcher, then six years old, noticed that his two-year-old sister, Mary Kate, had fallen into their above-ground swimming pool. Apparently she somehow got past a locked gate and up to the pool deck, where she fell in the pool while reaching for a toy in the water.

Jay immediately pulled Mary Kate to the surface and yelled for his mother. Caroline Fletcher said she didn't see or hear anything until Jay yelled that Mary Kate was under water. Fletcher, a registered nurse, says her daughter wasn't breathing when she was pulled out, but then Mary Kate vomited out water and began to breathe on her own.

Much to his mother's surprise, Jay was calm throughout the ordeal. When she asked how he knew what to do, Jay said he had learned it from a Corps ranger.

On June 6, Jay and 65 other students from Westside Elementary School visited Carters Lake, a Corps hydropower and flood control lake in Mobile District, for a water safety presentation by Jeff Pobiegló, a Corps park ranger at the lake.

Pobiegló, a 23-year veteran Corps ranger, is a member of the district's Water Safety Task Force, and South Atlantic Division's representative to the Corps' National Water Safety Committee (NWSC). His water safety class taught the children:



Buddy Beaver, Mobile District's safety mascot, poses with ranger Jeff Pobiegló and Jay Fletcher. Pobiegló's safety class helped Jay save Mary Kate Fletcher, Jay's little sister, from drowning. Pobiegló is holding Mary Kate. (Photo courtesy of Mobile District)

- Learn to swim.
- Never swim alone. Use the buddy system and swim with a friend.
- Never dive in shallow or unfamiliar water.
- Wear a life jacket when boating.

- The class also encouraged adults and teachers to always keep an eye on children when they're near water because drownings can be quick and quiet, as in Mary Kate's situation.

Such presentations are an important part

of the Corps rangers' work.

In the U.S., drowning is the second leading cause of accidental deaths for people between the ages of one and 44. Each year more than 6,000 people drown in our country. Many of these drownings could be prevented with the proper skills, training, and education through water safety awareness.

Corps rangers play an important role in that education. With more than 450 water resource projects, the Corps is the leading provider of water-based recreation in the U.S. As part of our mission to provide safe recreation for the public, Corps park rangers develop and participate in many water safety programs and presentations every year. They educate thousands of people of all ages about possible dangers around the water.

On July 18, Jay Fletcher turned seven years old. Pobiegló and Buddy Beaver, Mobile District's safety mascot, invited Jeff and his family to the Dalton community pool in Dalton, Ga. Other students and faculty from Westside Elementary School also attended.

In recognition of the rescue, Buddy Beaver and Pobiegló gave Jay the Corps' new safety coin and lapel pin. Jay also received a Buddy Beaver Award and water safety handouts, and the water safety video *Safe Passage* produced by the National Water Safety Products Advisory Committee.

(Jeff Pobiegló, park ranger at Carters Lake, and Bernard Tate of Headquarters contributed to this article.)

## Booth carries safety message to crowds

By Charles Lee  
Vicksburg District

"Thunder on the Water" might not sound like the most productive place to have a safety booth. The name conjures up images of hot boats and cool good ol' boys, neither paying much mind to safety.

But "Thunder on the Water" is actually a safe boating event held each year at Grenada Lake, Miss., a flood control reservoir in Vicksburg District. The festival is a model of what can be accomplished when a Corps district partners with the community to increase the safety of visitors at local recreational facilities.

"Thunder on the Water" has grown each year in visitors and water safety events. According to official estimates, 148,000 visitors attended the 2001 event. The festival gives Grenada Lake rangers a chance to carry the safety message to large audiences, and they took advantage of every opportunity to emphasize water safety for boaters and swimmers alike. Rangers were present at boat ramps performing courtesy boat inspections, and discussing water safety on and around the lake.

At a Corps-sponsored water safety booth, adults and children practiced throwing rescue devices identical to the ones mounted on posts at the local beaches. About 385 T-shirts, caps, life jackets, and water safety coloring books were awarded to participants who demonstrated the correct procedure for using



Watercraft races are an exciting part of the "Thunder on the Water" Festival. The three-day festival attracts 148,000 visitors and pumps about \$45 million into the local economy. (Photo courtesy of Vicksburg District)

these devices. More than 400 visitors attended the water safety presentations and demonstrations.

The Grenada Lake Youth Recreational Safety Camp successfully taught 27 youth safety on water and land. Two University of Mississippi coaches (David Cutcliffe, head football coach, and Rod Barnes, head basketball coach) spoke to the kids at the camp and encouraged them to practice safety in all water-related activities and athletics.

During festival week, local cable television companies broadcast numerous public service announcements, and local businesses included the festival as a part of their commercials.

But safety wasn't the only draw for "Thunder on the Water." Other features included events, carnival rides and games, arts and crafts vendors, fireworks, concerts, 10-K and 5-K runs and walks, a fishing rodeo for kids, the World Qualifying Personal Watercraft Surf & Turf



Games made teaching the safety message fun and easy. (Photo courtesy of Vicksburg District)

races, and an antique car and truck show.

According to the Grenada Tourism Commission, the 2001 festival pumped about \$45 million into the local economy. The three-day event is a partnership effort between the Corps, U.S. Coast Guard Boating Detachment, Mississippi Department of Fisheries, Wildlife and Parks, the Grenada County Sheriff's Department, and the Grenada, Yalobusha, and Bolivar County Dive Rescue teams and civil defense agencies.